10th Class 2018		
Biology	Group-II	Paper-II
Time: 1.45 Hours	(Subjective Type)	Max. Marks: 48

(Part-I)

2. Write short answers to any FIVE (5) questions: (10)

(i) Differentiate between glottis and epiglottis.

Ans Glottis is a narrow opening at the floor of pharynx which leads into larynx while it is guarded by a flap of tissue called the epiglottis.

(ii) How does the gaseous exchange occur in leaves and young stems?

Ans The leaves and young stems have stomata in their epidermis. The gaseous exchange occurs through these stomata. The inner cells of leaves (mesophyll) and stems also have air spaces among them, which help in the exchange of gases.

(iii) Define hydrophytes and give an example.

Ans Hydrophytes are the plants which live completely or partially submerged in freshwater. Such plants do not face the problem of water shortage. The most common example of such plants is water lily.

(iv) Write down the method of lithotripsy.

Ans **Lithotripsy** is another method for the removal of kidney stones. In this method, non-electrical shock waves from outside are bombarded on the stones in the urinary system. Waves hit the dense stones and break them. Stones become sand-like and are passed through urine.

(v) **What is meant by succulent organs? Give an example.**

Ans Some xerophytes have special parenchyma cells in stems or roots in which they store large quantities of water. This makes their stems or roots wet and juicy, called succulent organs.

Example:

Cactus is the common example of such plants.

(vi) **Write down the function of occipital lobe.**

Ans Occipital lobe is a part of cerebrum in the brain, which receives and analyzes visual information.

(vii) **Differentiate between sympathetic system and parasympathetic system.**

Ans Sympathetic nervous system prepares body to deal with emergency situations. For example, it dilates pupils, accelerates heartbeat, increases breathing rate and inhibits digestion. When stress ends, the parasympathetic nervous system takes action and normalizes all the functions. It causes pupils to contract, promotes digestion, and slows the rate of heartbeat and breathing rate.

(viii) **What is meant by brain stem?**

Ans The medulla oblongata, pons and midbrain connect the rest of the brain to spinal cord. They are collectively called as brain stem.

3. Write short answers to any FIVE (5) questions: (10)

(i) **Differentiate between flexion and extension.**

Ans If a muscle contracts and bends the joint, that movement is called flexion. On the other hand, if a muscle contracts and straightens the joint, that movement is known as extension.

(ii) What is meant by osteoporosis?

Ans Osteoporosis is a bone disease in adults, especially in old people. It is more common in old women. In osteoporosis, there is a decrease in the density of bones due to loss of calcium and phosphorus. It may be due to malnutrition (lack of proteins and Vitamin C), lack of physical activities or deficiency of estrogen hormone.

(iii) How binary fission take place in invertebrates? Give an example.

Ans During binary fission takes place in invertebrates, body is cut into two halves (fission) and the missing body parts are regenerated in both halves. For example, this type of asexual reproduction is common in planaria and many echinoderms.

(iv) Define endospores, give an example.

Ans Under unfavourable conditions, some species of bacteria reproduce by forming spores. As they are formed inside bacterial cells, so are called endospores. For example, Clostridium and Bacillus species.

(v) Write the name of two important parts of angiospermic seed.

Ans Two important parts of angiospermic seed are:

1. The embryo
2. The endosperm tissue

(vi) Differentiate between breeds and cultivars.

Ans In artificial selection, the bred animals are known as breeds, while bred plants are known as cultivars.

(vii) Define the Mendel's law of independent assortment.

Ans The Mendel's law of independent assortment states as "the alleles of a gene pair segregate (get separated and

distributed to gametes) independently from the alleles of other gene pairs."

(viii) What is meant by natural selection? Also give an example.

Ans Natural selection is the process by which the better genetic variations become more common in successive generations of a population.

Example:

We can see a mouse population with variations in skin colour. Cat preys upon light and medium coloured mouse. In first generation, light coloured mouse is preyed upon by cat. Only medium and dark coloured mouse can make their next generations.

4. Write short answers to any FIVE (5) questions: (10)

(i) What is global warming?

Ans The addition of greenhouse gases (*e.g.*, carbon dioxide, methane, ozone) in atmosphere increases the temperature of the Earth. These gases remain in the lowest part of Earth's atmosphere and do not allow solar radiations to reflect back into space. As a result, heat remains within the Earth's atmosphere and increases its temperature. This is called global warming.

(ii) Define alcoholic fermentation.

Ans Alcoholic fermentation is carried out by many types of yeast such as Saccharomyces cerevisiae. This process is quite important and is used to produce bread, beer, wine and distilled spirits. In this process, carbon dioxide is removed from pyruvic acid.

(iii) Give uses of glycerol.

Ans Glycerol is used as solvent; used in the production of plastics, cosmetics and soaps; used in printing, and used as sweetener.

(iv) Give two objectives of genetic engineering.

Ans Following are two objectives of the genetic engineering:

1. Isolation of a particular gene or part of a gene for various purposes such as gene therapy.
2. Production of particular RNA and protein molecules.

(v) How gene of interest is isolated?

Ans In the first step, the genetic engineer identifies the gene of interest in a door organism. Special enzymes, called restriction endonucleases, are used to cut the identified gene from the total DNA of donor organism.

(vi) Explain drugs from animals.

Ans Drugs obtained from animals are usually their glandular products. Fish liver oils, musk, bees' wax, certain hormones and antitoxins are obtained from animal sources.

(vii) Differentiate between antibiotics and disinfectants.

Ans Antibiotics inhibit or kill bacteria within or on the body. On the other hand, disinfectants destroy microorganisms found on non-living objects.

(viii) What are narcotics?

Ans Narcotics are strong painkillers. These drugs are often prescribed in conjunction with other less potent painkillers. These are used to relieve pain for patients with chronic diseases such as cancer. But some people may abuse narcotics for ecstatic effects. For example,

morphine and codeine are the narcotics, derived from opium (poppy).

(Part-II)

NOTE: Attempt any TWO (2) questions.

Q.5.(a) Describe the osmoregulatory role of kidney. (4)

Ans Osmoregulatory Role of Kidney:

Osmoregulation is defined as "the regulation of the concentration of water and salts in blood and other body fluids."

Kidneys play important role in osmoregulation by regulating the water contents of blood. It is an important process as excessive loss of water concentrates the body fluids whereas excess intake of water dilutes them.

When there is excess water in body fluids, kidneys form dilute (hypotonic) urine. For this purpose, kidneys filter more water from glomerular capillaries into Bowman's capsule. Similarly, less water is reabsorbed and abundant dilute urine is produced. It brings down the volume of body fluids to normal.

When there is shortage of water in body fluids, kidneys filter less water from glomerular capillaries and the rate of reabsorption of water is increased. Less filtration and more reabsorption produce small amount of concentrated (hypertonic) urine. It increases the volume of body fluids to normal. This whole process is under hormonal control.

(b) Explain the structure of neuron. (4)

Ans For Answer see Paper 2018 (Group-I), Q.5.(b).

Q.6.(a) What is bone? Describe its structure. (4)

Ans **Bone:**

Bone is the hardest connective tissue in body. Bones not only move, support and protect the various parts of body but also produce red and white blood cells and store minerals.

Structure of Bone:

The hard outer layer of a bone is called ***compact bone*** while the interior of bone is soft and porous. It is called ***spongy bone***. Spongy bone contains blood vessels and bone marrow.

Like cartilage, the matrix of bones also contains collagen. But it also contains minerals *e.g.*, calcium and phosphate. Cartilage contains a single type of cell. On the other hand, bones contain different types of cell. The mature bone cells are called osteocytes.

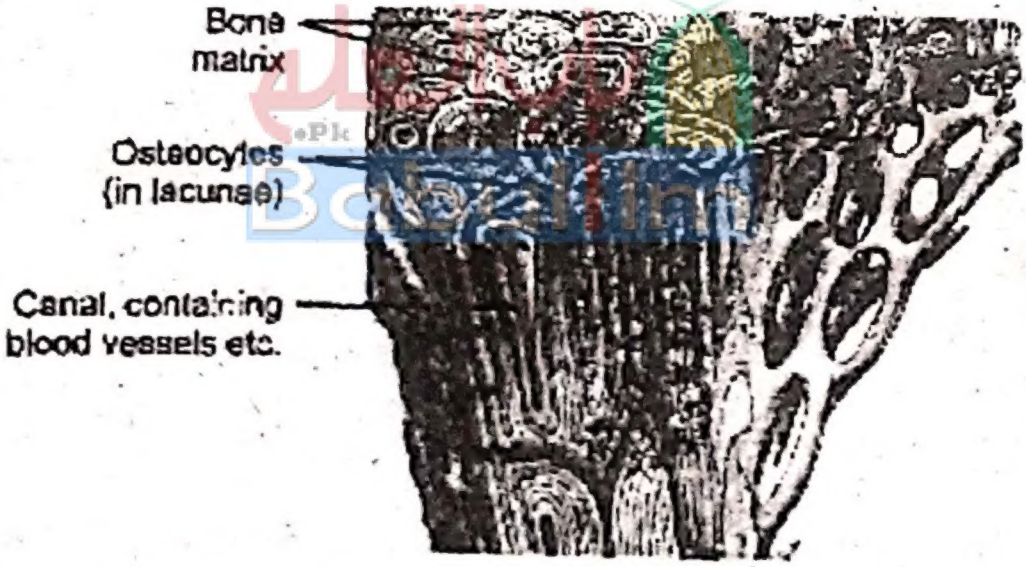

Fig. The internal structure of bone.

(b) Describe the advantages and disadvantages of vegetative propagation of plants. (4)

Ans Plants can reproduce asexually via vegetative propagation. This method of reproduction has some advantages and disadvantages as well.

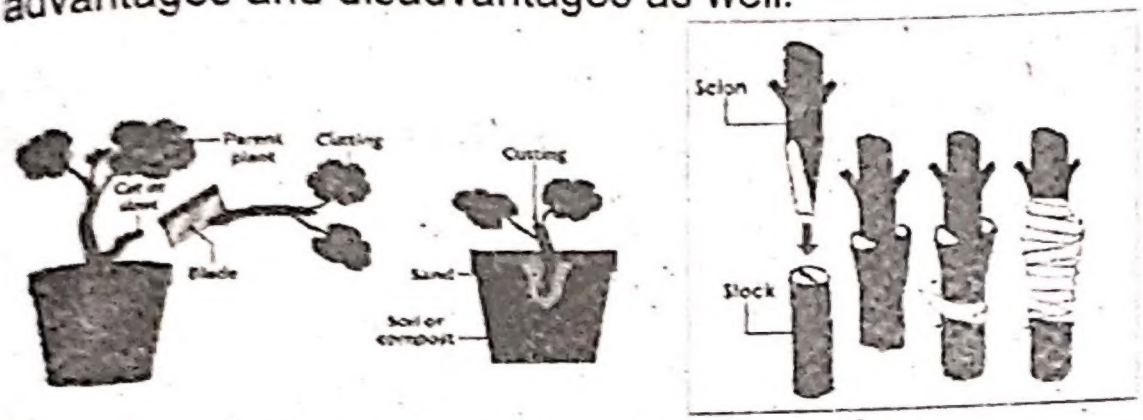

Fig. Artificial vegetative propagation: Cutting (left) and Grafting (right).

Advantages:

The offsprings produced through vegetative propagation are genetically identical. Therefore, beneficial characteristics can be preserved. In vegetative propagation, there is no need of any mechanism of pollination. It helps to increase number of plants at a rapid rate. The organs of vegetative propagation enable many plants to pass over unfavourable conditions. Plants bearing seedless fruits can be grown only by vegetative propagation.

Fig. Product of artificial vegetative propagation: Seedless oranges.

Disadvantages:

The plants do not have genetic variations. Species specific diseases can attack and this can result in the destruction of an entire crop.

Q.7.(a) What is acid rain? Describe its bad effects. (4)

Ans **Acid Rain:**

When rain falls through polluted air, it comes across chemicals such as oxides of sulphur and nitrogen. These chemicals interact with water vapours in the presence of sunlight to form sulphuric acid and nitric acid. These acids remain as vapour at high temperatures. As temperature falls, the acids begin to condense into liquid form and mix with rain or snow, on the way down to the Earth. This makes rain acidic with pH range of 3 to 6. Some of the significant ill-effects of acid rain are:

Bad Effects of Acid Rain:

(i) Acid rain destroys the necessary nutrients present in the waters of rivers and lakes etc. It also lowers the pH of water. Most of the aquatic animals cannot survive at this pH.

(ii) Acid rain washes nutrients out of soil, damages the bark and leaves of trees and harms root hairs. Leaf pigments (chlorophyll) are also destroyed.

(iii) Metallic surfaces exposed to acid rain are easily corroded. Fabrics, paper and leather products lose their material strength or disintegrate easily.

(iv) Building materials such as limestone, marble, dolomite, mortar and slate are weakened with acid rains because of the formation of soluble compounds. Thus, acid rain is dangerous for historical monuments. The building of famous Taj Mahal has been corroded at many places, due to acid rains.

(b) Discuss role of biotechnology in the field of food and agriculture. (4)

Ans Biotechnology has played a significant role in the fields of food and agriculture. With the help of microorganisms, fermented food like pickle, curd has been prepared. In the same way, malted food like powdered milk and certain dairy items are being produced by the use of this technology. Moreover, wine and beer are also being produced by the use of biotechnology. In agriculture, such transgenic plants (plants having a foreign gene) have been produced which give more yield and are resistant to pesticides and herbicides. Similarly, transgenic animals like cows, goats give more milk and meat. The nutritious value of milk and meat has also been increased by the use of biotechnology. In addition, different types of drugs are obtained from the urine, milk, etc. of transgenic animals such as rats, cows, goats, etc.